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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/729,827	12/05/2003	Guillaume Bouche	02GR128554494	8531

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EXAMINER

EDMONDSON, LYNNE RENEE

ART UNIT PAPER NUMBER

1725

DATE MAILED: 08/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/729,827

Applicant(s)

BOUCHE ET AL.

Examiner

Lynne Edmondson

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1725

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 May 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 16-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 16-23 is/are rejected.
- 7) ☒ Claim(s) 24 and 25 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 16, 17 and 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Graham et al. (US 2003/0197050 A1).

Graham teaches a method of attaching a smooth element coated with Si up to 1 micron thick to a smooth element coated with Ni up to 50 nm (paragraphs 18-21). Multiple layers may be employed (paragraphs 27 and 28) and heated to a temperature greater than 250 C (1100 F or 593 C) for 1 minutes (paragraphs 37-39). However the roughness of the interface of not disclosed. Neither is forming a microsystem disclosed.

It would have been obvious to one of ordinary skill in the art at the time of the invention that the method can be used to form a variety of devices including but not limited to Microsystems and that it would be desirable to keep the surface roughness of the interface below 1 micron to provide reliable bonds without defects. A small amount of roughness would facilitate gripping of the surfaces while too great a roughness would create gaps.

3. Claims 16, 17, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukaya et al. (USPN 4763828).

Fukaya teaches a method of attaching a smooth element coated with Si to a smooth element coated with Ni (figure 1D and col 2 lines 15-60) and heated to a temperature greater than 250 C for at least 5 minutes to an hour (examples 5 and 6). However the roughness of the interface of not disclosed.

It would have been obvious to one of ordinary skill in the art at the time of the invention that the method can be used to form a variety of devices including but not limited to Microsystems and that it would be desirable to keep the surface roughness of the interface below 1 micron to provide reliable bonds without defects. A small amount of roughness would facilitate gripping of the surfaces while too great a roughness would create gaps.

4. Claims 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cohn et al. (US 2005/0168306 A1).

Cohn teaches a method of attaching a smooth element coated with Si to a smooth element coated with Ni and heated to a temperature of 300 C for about 10 minutes (paragraphs 85 and 92 and claim 18). However the roughness of the interface of not disclosed.

It would have been obvious to one of ordinary skill in the art at the time of the invention that the method can be used to form a variety of devices including but not limited to Microsystems and that it would be desirable to keep the surface roughness of the interface below 1 micron to provide reliable bonds without defects. A small amount

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of roughness would facilitate gripping of the surfaces while too great a roughness would create gaps.

5. Claims 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguchi et al. (USPN 6507103 B2).

Yamaguchi teaches a method of attaching a smooth element coated with Si (21) up to 0.2 microns thick (col 3 lines 56) to a smooth element coated with Ni and heated to a temperature of 350 to 500 C for several minutes to several hours (col 3 line 57 – col 4 line 34). However the roughness of the interface of not disclosed.

It would have been obvious to one of ordinary skill in the art at the time of the invention that the method can be used to form a variety of devices including but not limited to Microsystems and that it would be desirable to keep the surface roughness of the interface below 1 micron to provide reliable bonds without defects. A small amount of roughness would facilitate gripping of the surfaces while too great a roughness would create gaps.

Response to Arguments

6. Applicant's arguments with respect to claims 16-23 have been considered but are moot in view of the new ground(s) of rejection.

7. It is noted that Fukaya teaches smooth elements which are coated. There is no quantitative measurement of the terms "smooth" or "coated".

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8. As described in applicant's remarks on page 7 paragraph 4, Graham teaches a Si coating up to 1 micron and a Ni coating up to 50 nm which would create a bonding layer of Si and Ni with a thickness of about 1 micron. The Si may be different sizes, one of which is about 1 micron. The few nm of Ni would not substantially change the thickness and would fall within the range of about 1 micron.

9. In Yamaguchi and Cohn, a hermetic seal is formed so although no quantitative roughness is taught, presumably conditions at the interface are similar to provide a similar bond.

Allowable Subject Matter

10. Claims 24 and 25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lynne Edmondson whose telephone number is (571) 272-1172. The examiner can normally be reached on Monday through Thursday from 6:30 a.m. to 5 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lynne Edmondson
Primary Examiner
Art Unit 1725

URB
8/3/06

LRE